

# Sony Broadcast BVH 1100 PS

1 INCH OMEGA FORMAT VIDEOCORDER

CAPTURING THE LIVING IMAGE...



# Sony Broadcast Equipment ... Flexibility in System Design

The BVH-1100PS is supported by a complete range of associated equipment. Each unit is designed as part of a unified, 1-inch format recording system.

The BVP-300 three-tube camera. Extensive use of automatic control techniques ensure its outstanding picture quality is maintained, even in the most difficult operating conditions. Unique pre-amp FET's have been developed to give remarkable low light performance. Weighing less than 6 kg, it requires no separate back-pack.

And the BVH-500PS portable 1-inch Videocorder, too. EBU type 'C' format, integrates with the BVP-300 camera for field use — with recordings directly interchangeable with the BVH-1100PS. Up to one hour's continuous recording with a self-contained battery, three audio tracks and a built-in time code generator — all in one 22 kg weatherproof unit.

Digital Time Base Corrector — BVT-2000P/S. Designed to exploit to the full the advanced features of the BVH-1100PS Videocorder. Digital drop out compensation, chroma noise reduction



and up to a 20 line window correction range are just some of the features of this outstanding TBC.

BVG-1000 Time Code Generator/Reader. Not only a time code generator/reader and character generator, the unit can also add time code into the vertical interval of a video signal being recorded. Used with the BVH-1100PS Videocorder, time code can be read off tape at any speed from still frame to 128 times normal.

For the ultimate in video tape editing, the Sony Broadcast BVE-5000 microprocessor controlled system will control up to four playback BVH-1100PS Videocorders from a list of 500 different editing operations entered into its memory. The IF-1000CE interface unit allows direct connection of a BVH-1100PS Videocorder to a BVE-500 ACE editing control unit — extending the use of the Videocorder to include editing from U-matic to 1 inch formats.

Sony Broadcast V-16 series tape, for unsurpassed picture and sound recording. Precisely dispersed, high coercivity magnetic particles give extended frequency response and excellent signal/noise performance. And an exclusive back coating improves tape durability with lower dropout and reduced head wear.

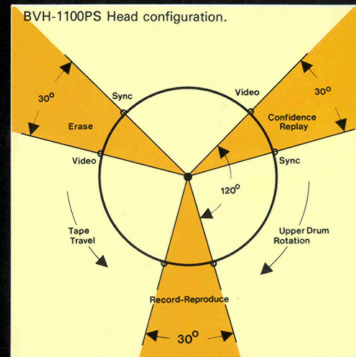
## The Unique Sony Broadcast BVH 1100 PS 1 inch Videocorder for EBU type 'C' format



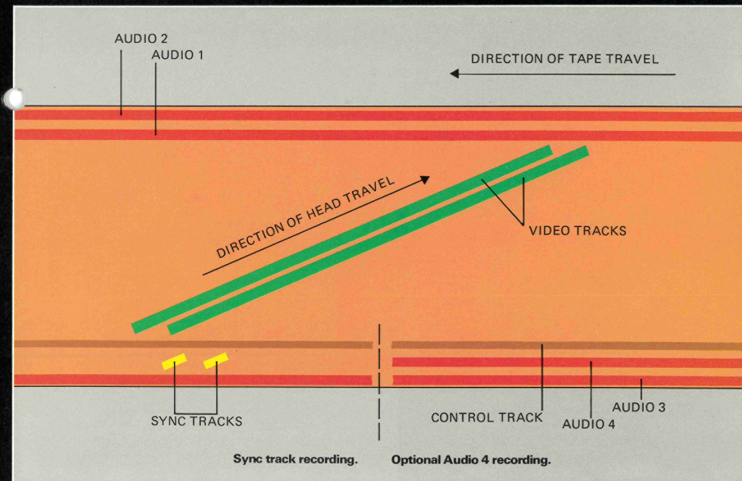
As a design philosophy, all Sony 1 inch format Videocorders can record and playback the complete, unmodified, television waveform. In its standard operating mode, the BVH-1100PS accomplishes this with the proven 'one and a half head' recording technique — a primary video head handles all the active picture lines and part of the vertical interval while the half, or sync, head records the remaining part of the vertical interval. In this way all the information contained in the television field is accurately recorded and reproduced — including test signals, teletext, time code or any other information in the vertical interval.

In the BVH-1100PS a second pair of heads is added to give confidence replay of both picture and sync information during recording, while two further heads provide precise erasure of video and sync tracks for editing.

In the EBU 'C' format, the recording of the full vertical interval is optional and the area of tape scanned by the sync head can be used for a fourth audio track. The BVH-1100PS is fully compatible with this format. Its video processing circuitry reconstitutes the missing lines of information when replaying a tape recorded without vertical sync, and when the fourth audio track option is fitted to the Videocorder its use inhibits the recording of the sync track.



Track positions in the EBU Type C format, showing how the optional Audio 4 track replaces the sync track.



# The world's finest technology at your fingertips



# BVH 1100 PS

## 1 INCH OMEGA FORMAT VIDEOCODER

The BVH-1100PS is a 1 inch helical scan Videocorder, conforming to the EBU Type C format. It features built in electronic editing, optional Dynamic Tracking for broadcast quality slow and stop motion replay, confidence video replay, BIDIRES tape control system for rapid edit point location and three programme audio tracks — with an optional fourth track.

## Operational Features

### Video

The BVH-1100PS operates on both 625-line PAL and SECAM standards. A sync mode selector switch gives either manual or automatic selection of input video/reference video. In the Auto mode, input video is selected during recording and reference video during playback. Selectable 8 field colour/4 field/2 field framing is provided as a standard feature.

Two video outputs are provided, together with a sync output. A multipin connector carries all necessary signals to interface the BVH-1100PS with a Sony Broadcast BVT-2000P/S Time Base Corrector; separate outputs of TTL level frame pulse and tape drop out signal are also provided. This drop out signal can be selected to be either RF off tape or a TTL level pulse.

### Confidence Replay

Broadcast quality confidence replay of video and sync tracks during recording is provided by a second pair of heads mounted on the video head drum — making it unnecessary to record important programme material in duplex.

### Monitoring

Input Video, Demod. Out, Control Track Out, RF Envelope, Audio Monitor Selector Output and an external video input may be selected to the video monitoring output. A front panel meter indicates either video recording level or RF level.

### Audio and Time Code

Three programme audio tracks are provided as standard, each with input and output level controls. Channel 3 may be used as a cue track, a microphone input jack on the front panel takes priority over the line input.

An optional EBU time code generator/reader can be fitted for time code recording on Channel 3. In the BIDIRES search mode, this channel is switched to wide band replay to allow recovery of time code at maximum search speed.

### Audio 4

The EBU Type C format permits a fourth audio track to be located in the area of tape normally used for the sync track. An alternative head stack and audio circuitry for this fourth audio track can be fitted as a factory option. When Audio 4 is in use, sync track recording is inhibited, and on playback the missing lines of the vertical interval are reformed by the video playback processing circuitry.

### Monitoring

A peak reading meter is provided for audio Channels 1 to 3; output levels are indicated when the machine is in the play mode, in other modes the meters read recording level. A monitoring output is fed from a front panel selection of Channel 1, Channel 2, Channel 1 & 2 and Channel 3. The Channel 1 & 2 position is used to monitor Audio 4 when this option is fitted, and the programme meter for Channel 3 can be switched to read this additional track.

### BIDIRES

Rapid location of precise points in a recording is vital for fast, accurate editing.

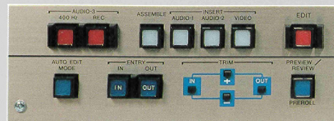
Sony Broadcast's exclusive BIDIRES tape control system meets this need with two distinct modes of operation — Shuttle and Jog. In the Shuttle mode, the tape can be fast wound in either direction and, through a Sony Broadcast BVT-2000P/S TBC, recognisable colour pictures are preserved at up to ten times normal speed — and even up to 50 times in monochrome. With the Jog mode selected, the tape reels faithfully follow the rotation of the BIDIRES control knob, in either direction, at up to a maximum of five times normal tape speed. Two complete frames of the recording are scanned for every turn of the control — and all the time the BVH-1100PS provides a locked colour picture. This tape control system makes location of precise edit points a very rapid process — the Shuttle mode used to find the approximate point on the tape and the Jog mode then selected to find the precise frame.



### Editing

As well as providing manual control of insert and assemble editing, the BVH-1100PS includes an automatic editing control system. It features:

- Selection of edit 'in' and 'out' points and automatic storage of decisions.
- Frame by frame adjustment of edit points.
- Pre-selection of assemble or insert modes.
- Preview/review button which automatically rewinds video tapes beyond an edit point to preview an edit decision, or review a completed edit.
- Initiation of editing commands from the record machine.
- Effectively zero delay between video and audio events.

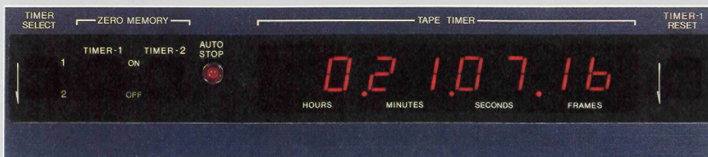


Editing Control Panel.

### Tape Timers

Two tape timers, acting independently from a tape driven counter but with a common display, provide a variety of time keeping systems. Timer 1 can be reset to zero at any time. Time 2 is reset whenever tape is unlaced from the machine. The zero memory function brings tape to a gentle stop at zero counter reading — with fully automatic deceleration from either fast forward or rewind to prevent damage or loss of tape leader.

With the optional EBU time code reader/generator fitted, Timer 1 can also be used to read time code and user bit information.



### Dynamic Tracking

A powerful option on the BVH-1100PS is Dynamic Tracking. Although its advanced tape transport servo systems and extremely accurate tape guides, together with a TBC, will provide locked pictures over a wide speed range, broadcast quality slow and stop motion replay requires further refinement in head to tape positioning.

Dynamic Tracking provides this extra degree of refinement — giving full broadcast quality pictures over a range of one fifth normal speed in reverse, through still frame, to twice normal speed forward.

This speed range is varied by the BIDIRES control knob when the DT playback mode is selected and the 'Jog' button pressed. As an added feature, the replay speed can be changed from normal to a speed pre-set on the BIDIRES control knob, and back again, by alternately pressing the 'Jog' and 'Play' buttons. All these transitions are made without any picture disturbance.

Dynamic Tracking facilities can be increased still further by use of an optional 'Slo-Mo' remote control unit.

### Mechanical Design

The outstanding mechanical design of all BVH series Videocorders and their manufacture to very tight tolerances ensures complete tape interchangeability between every machine.

The tape transport of the BVH-1100PS does not use any drive belts — five direct coupled, servo controlled motors drive the video head drum, drive and tension capstans and both tape reels. The wide lock range of the highly stable drum servo maintains precise phase control during all edit transitions; whilst the reel servo system co-ordinates direction and speed of reel rotation, and the amount of tape to be made. Apart from video damage during fast editing.

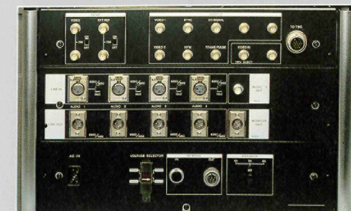
The overall mechanical arrangement of the BVH-1100 has been designed to give long-term reliability and ease of routine maintenance. Video head replacement, for example, is achieved by changing the entire upper video head drum which then requires only one simple mechanical check to be made. Apart from video heads, all other components have been chosen for a target MTBF of 3000 hours. The entire BVH-1100P/S can be separated into five sub-units, each one of which will fit into a standard 19 inch equipment rack, enabling them to be used in a variety of configurations to suit individual users operational needs.

### Capstan Override

When programme requirements demand duplex playback by two BVH-1100PS Videocorders, perfect synchronisation can be achieved by holding down the Play button on the reserve machine and operating its BIDIRES control until synchronous playback is reached.

### Remote Control

All basic machine functions, including those for insert and assemble editing, tape timers and status lamps, can be remotely controlled via a digital command system.



BVH-1100PS rear connector panel.

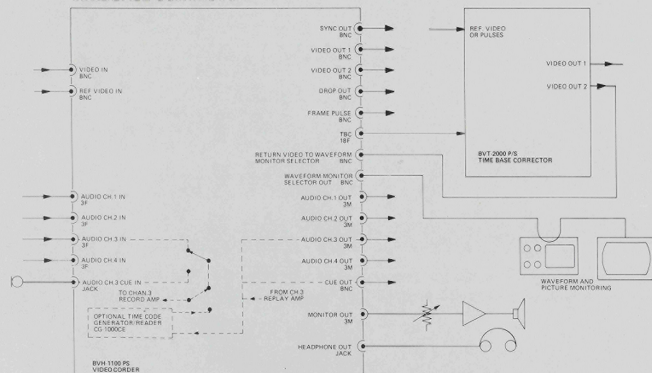


Controls for routine adjustments are located on the operators set-up panel. Differential gain and phase controls allow precise matching of record/playback and confidence playback.

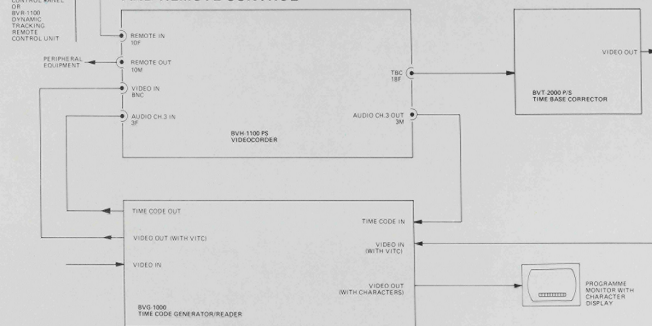


## Typical Systems Configurations

### OPERATION WITH BVT-2000/P/S TIME BASE CORRECTOR



### OPERATION WITH BVG-1000 TIME CODE GENERATOR/READER AND REMOTE CONTROL



## Performance Data and Specification

### VIDEO

#### Recording System

1.5 head, high band, direct FM recording  
7.16-8.9 MHz  
23.98 cm/s (9.44 in/sec)

#### Tape Speed

21.39 m/s (842 in/sec)

#### Writing Speed

30 Hz-5.5 MHz  $\pm 0.5$  dB -3 dB at 6.0 MHz

#### Bandwidth

44 dB record/playback 43 dB interchanged tape

#### Signal/Noise Ratio

4% (with Sony Broadcast BVT-2000/P/S TBC)

#### Differential Gain

4% (with Sony Broadcast BVT-2000/P/S TBC)

#### Differential Phase

2%

#### LF Linearity

Less than 1%K

#### Transient Response, 2T Pulse

-35 dB (75% colour bars)

#### Luminance/Chrominance Delay

25 ns

#### Time Base Stability

1.5  $\mu$ s p-p (V Lock mode)

#### Video Input

1 V p-p,  $\pm 0.3$  V, 75 ohms or bridging

#### Reference Video Input

1 V p-p,  $\pm 0.3$  V, 75 ohms or bridging

#### Video Outputs

Two at 1 V p-p, 75 ohms

#### Sync Output

2 V p-p, 75 ohms

#### Waveform Selector Output

Output level according to source selected, 75 ohms

#### Frame Pulse Output

TTL level

#### Drop-out Signal Output

TTL level drop-out pulse or RF output, selectable

#### Waveform Monitor Selector

Input video, demod out, span, control track, RF envelope, audio selector out

#### Servo Lock Reference Selector

Reference video, auto, input video

#### Servo Lock Mode Selector

8 field colour framing, 4 field, 2 field

### AUDIO

#### Frequency Response

Ch1-Ch4, 200 Hz-7.5 KHz  $\pm 1$  dB 50 Hz-15 KHz

+1.5 dB, -3 dB at reference level

100 nWb/m tape flux

#### Signal/Noise Ratio

Ch1, 2 and 4 56 dB Ch3 50 dB. Referred to 3% distortion level at 1 kHz (RMS, unweighted)

#### Distortion

Ch1-Ch4, 1% at 100 nWb/m tape flux

#### Crosstalk

Ch1-Ch4, -60 dB between any two tracks at 1 kHz

#### Wow and Flutter

0.1% RMS, 0.5-250 Hz, NAB, unweighted

#### Inputs

Ch1, 2 and 4 -10 to +20 dBu, 600/10K ohms, balanced

Ch3, -10 to +20 dBu, 600/10K ohms, balanced, or at our mic input

#### Line Outputs

Ch1-Ch4, +8 dBm into 600 ohms, balanced (can be adapted for 150 ohms operation)

#### Time Code Output

Ch3, 0.5 V p-p, 75 ohms

#### Monitor Output

-10 dBm into 600 ohms, balanced

#### Monitor Selector

Ch1-Ch4

#### Headphone Output

8 ohms, unbalanced

### ELECTRICAL

#### Power Requirements

100/120/220/240 V  $\pm 10\%$  50/60 Hz

#### Power Consumption

700 W maximum

### GENERAL

#### Operating Temperature

5°C to 40°C

#### Humidity

10-90% (non-condensing)

#### Lock-Up Time

Less than 3 sec

#### Recording Time

1 hour 37 minutes with 10.5 inch reel

#### Fast Forward/Rewind Time

2 minutes maximum with 1 hour tape

#### Recommended Tapes

Sony Broadcast V-16 series

#### Reel Size

9.5 or 10 inch reel, NAB type

#### Tape Timers

Selectable display (hours, minutes, seconds and frames) of either: Timer 1 - EBU Time Code/User Bit/Tape driven counter, Timer 2 - Tape driven counter, not re-settable by timer reset switch

#### Optional Facilities

Dynamic Tracking, 4th audio track (factory option), CG-1000CE EBU time code reader/generator unit

#### ACCESSORIES

#### Included

Mains lead, Take-up reel, PC extender board, Operation and maintenance manual

#### Optional

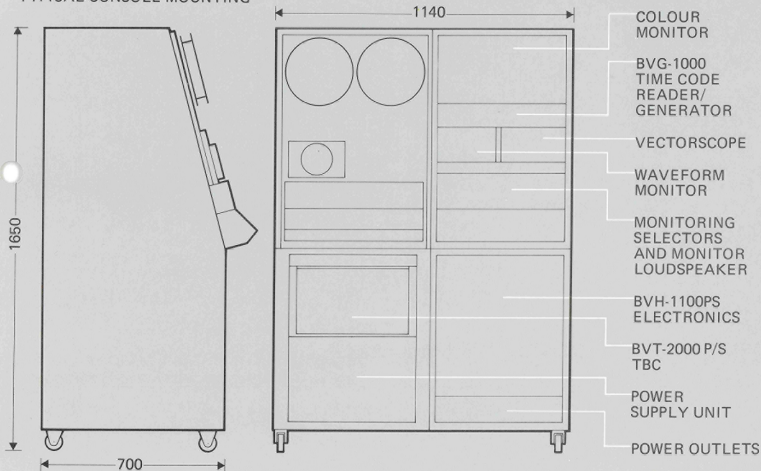
BVR-1000, Remote control unit, BVR-1100 Dynamic Tracking remote control unit

Rack mounting kit, Console mountings

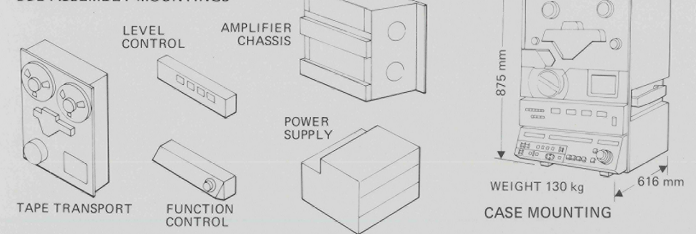
#### Design and specification may be subject to change without notice.

## Dimensions and Mechanical Configurations

### TYPICAL CONSOLE MOUNTING



### SUB ASSEMBLY MOUNTINGS



Unit	Size (WxHxD) (mm)	Weight (Kg)
1 Tape Transport	558 x 598 x 259	44
2 Function control	558 x 133 x 186	6
3 Amplifier chassis	482 x 532 x 373	23
4 Power supply	482 x 354 x 460	31
5 Level control	558 x 111 x 131	4





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